

We claim:

1. A process for the oxidative purification of an exhaust gas containing oxygen and a combustible component by oxidative reaction in an oxidation reactor, in which
5 the exhaust gas, before being introduced into the oxidation reactor, passes through a high-velocity path in which the flow velocity of the gas passing through is higher than the flashback velocity, which comprises recirculating to the high-velocity path a substream of the flue gas liberated in the oxidative reaction.
- 10 2. A process as claimed in claim 1, wherein the recirculation of flue gas in the high-velocity path establishes a flow velocity which is at least 1.2 times the flashback velocity.
- 15 3. A process as claimed in claims 1 and 2, wherein the flue gases are recirculated to the high-velocity path under control of volumetric flow rate and the flow velocity in the high-velocity path is used as control variable.
- 20 4. A process as claimed in claim 1, wherein the exhaust gas, upstream of the high-velocity path, is preheated via a heat exchanger operated by the flue gas waste heat.
- 25 5. A process as claimed in claim 1, wherein the temperature of the preheated exhaust gas is set in such a manner that the lower explosive limit, at the existing pressure and existing gas composition, is at least 4/3 times the value of the existing concentration of combustible components.
- 30 6. A process as claimed in claim 1, characterized in that an exhaust gas is used which originates from a heterogeneously catalyzed gas-phase oxidation and the temperature of the preheated exhaust gas is set in such a manner that it corresponds at maximum to the hottest temperature of the heterogeneously catalyzed gas-phase oxidation.
- 35 7. A process as claimed in claim 1, wherein the oxidation reactor used is a combustion chamber.
- 40 8. A process as claimed in claim 1, wherein an exhaust gas is used which originates from the heterogeneously catalyzed gas-phase oxidation of n-butane and/or n-butenes to maleic anhydride, of o-xylene to phthalic anhydride, of propene to acrylic acid, of isobutene to methacrylic acid, of 1,2-ethanediol to glyoxal and/or of ethene to ethylene oxide.

9. An apparatus for the oxidative purification of an exhaust gas containing oxygen and a combustible component according to the process as claimed in claim 1 comprising

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- a) a feed line (1) for the exhaust gas (I);
- b) an oxidation reactor (B);
- c) a high-velocity path (A) which is situated between the feed line (1) and the exhaust-gas side of the oxidation reactor (B);
- 10 d) a line (5) for recirculating flue gas, which line is situated between the flue-gas side of the oxidation reactor (B) and the exhaust-gas side of the high-velocity path (A); and
- e) a removal line (4) for the flue gas (II).